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of claims for Applicant

What is claimed is:

1. A transverse longitudinal-cylinder sewing machine, comprising:

an automatic thread loosening device;

5 a tension adjustment mechanism;

an automatic thread cutting bi-directional solenoid device; and

10 a differential fabric driving teeth displacement control device which includes;

15 a primary transmission mechanism;

a first and a second push mechanisms driven by said primary transmission mechanism for swinging reciprocally;

a first and a second adjustment mechanisms connecting to said first and said second push mechanisms;

20 a rocking mechanism driven by said primary transmission mechanism; and

a first and a second fabric driving mechanisms driven by said first and said second push mechanisms for reciprocal and horizontal movement, driven by said rocking

25 mechanism for swinging up and down thereby to move oscillate along an ellipsoidal track;

wherein said first and said second fabric driving mechanisms are normal to other mechanisms and form chained movements therewith to control an operation

25 displacement between said first and said second fabric driving

mechanisms, thereby to facilitate fabric movement and adjust to deviations of said first and said second push mechanisms through said first and said second adjustment mechanisms to control the relative operating displacements there between.

- 5 2. The transverse longitudinal-cylinder sewing machine of claim 1, wherein said primary transmission mechanism includes a co-axle which is assembled in this order: a first crank, a second crank and a third crank, said seventh crank being coupled with an first axle sleeve of a first bearing, said 10 the first axle sleeve being fastened to one end of said co-axle, said third crank being coupled on one end of an second axle sleeve of a second bearing, then coupled to one side of said seventh crank spaced by a washer, said second axle sleeve having another end coupling with a third bearing which is 15 coupled with said second crank from outside, said second crank having another side corresponding to said second axle sleeve to couple with an anchor assembly to allow said co-axle to couple with a lower arched wire mechanism; said co-axle, having another end corresponding to said seventh 20 crank fastened to an third axle sleeve which is coupled with a fourth bearing and a washer ring, said third axle sleeve being coupled with a fourth crank which has a slot formed at one end to couple with a fifth shaft to pivotally engage with said two linking arms to connect said first push mechanism and 25 said first adjustment mechanism.

3. The transverse longitudinal-cylinder sewing machine of
claim 1, wherein said the first push mechanism includes a fifth
crank which is pivotally coupled with another end of said
linking arm, said fifth crank being coupled with a second shaft
5 through an fourth axle sleeve, said second shaft having
another end coupling with a sixth crank which has another end
to pivotally couple with a first push arm through an anchor
member and connect to said first fabric driving mechanism.

4. The transverse longitudinal-cylinder sewing machine of
10 claim 1, wherein said first adjustment mechanism has a driven
member which has apertures formed thereon, one aperture
being engaged with a fastener for fastening, another aperture
being coupled with a driving shaft of a rocker adjustment
assembly, and yet another aperture being pivotally coupled
15 with said linking arm through a seventh shaft.

5. The transverse longitudinal-cylinder sewing machine of
claim 1, wherein said second crank of said primary
transmission mechanism has another end connecting to said
second push mechanism, the another end of said second crank
20 being pivotally coupled with one end of a seventh crank
through a third shaft, the end of said seventh crank inside the
sewing machine, said seventh crank being driven by an axle,
said axle located on one side of said seventh crank and being
coupled with said first push mechanism through an an ffifth axle
25 sleeve, a self-lubricating bearing, a linking element and a

linking arm pivotally coupled to said linking element; said axle located on another side of said seventh crank being coupled with another self-lubricating bearing and a linking element sandwiched between sixth and seventh axle sleeves,

5 said linking element being connected to said second adjustment mechanism.

6. The transverse longitudinal-cylinder sewing machine of claim 1, wherein said second adjustment mechanism is pivotally coupled with said linking element through one end

10 of a eighth crank having another end pivotally coupled with a linking arm and a ninth crank through a fourth shaft, said ninth crank having one end connecting to a driven member through a fifth shaft, said driven member having apertures formed thereon, one aperture being coupled with said fifth shaft, another aperture being coupled with an anchor member for anchoring, and a final aperture being coupled with a driving shaft of a rocker adjustment assembly, said linking arm of said second adjustment mechanism having another end driving said second fabric driving mechanism through tenth

15 and eleventh cranks.

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7. The transverse longitudinal-cylinder sewing machine of claim 1, wherein said first and said second fabric driving mechanisms include first and second sliding arms which have sliding troughs at the bottom to couple with a bracing shaft

25 which serves as a fulcrum to said first and said second sliding

arms, said first and said second sliding arms having distal ends which have rear fabric driving teeth and front fabric driving teeth respectively.

8. The transverse longitudinal-cylinder sewing machine of
5 claim 7, wherein said first and said second sliding arms have respectively another distal end opposite to the front and the rear fabric driving teeth to couple with said rocking mechanism through a sixth shaft; said rocking mechanism having one end fastening to a rocker arm mounted on said
10 sixth shaft, said rocker arm having another end coupled with said seventh crank of said primary transmission mechanism through a coupling member.

9. The transverse longitudinal-cylinder sewing machine of
claim 1, wherein said first fabric driving mechanism has a
15 distal end coupled with a first push arm of said first push mechanism through a coupling member, and said second fabric driving mechanism has a distal end coupled with said second push mechanism and said second adjustment mechanism through a second push arm.

20 10. The transverse longitudinal-cylinder sewing machine of
claim 1, wherein said primary transmission mechanism,
said first and second push mechanisms, said first and
second fabric driving mechanisms and said first and
second adjustment mechanisms have oil passages and oil
25 ports that communicate with each other after assembly.